इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 13617 (1992): Evaluation of pressure drop versus flow characteristics of pneumatic filters - Method of test [PGD 16: Fluid Power]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS 13617 : 1992

(Reaffirmed 2002)

भारतीय मानक

वायुचालित छन्नकों के लिये दाब ह्रास प्रति प्रवाह लक्षणों का मूल्यांकन – परीक्षण पद्धति

Indian Standard

EVALUATION OF PRESSURE DROP VERSUS FLOW CHARACTERISTICS OF PNEUMATIC FILTERS — METHOD OF TEST

UDC 66·067·4-85 : 620·16

© BIS 1992

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1992

Price Group 1

Pneumatic Fluid Power Systems Sectional Committee, PE 16

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by Pneumatic Fluid Power Systems Sectional Committee had been approved by the Production Engineering Division Council.

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure within an enclosed circuit. Air line filters are used to remove solid and liquid contaminants from the flowing gas to provide clean air for air operated devices connected downstream of the filter.

This Indian Standard formalizes practices and equipment requirements that have gained general acceptance and are currently being used by a majority of the manufacturers. In preparation of this draft Indian Standard considerable assistance has been derived from NFPA/T 3.12.2.6-1975, issued by the National Fluid Power Association Inc, USA.

Indian Standard

EVALUATION OF PRESSURE DROP VERSUS FLOW CHARACTERISTICS OF PNEUMATIC FILTERS — METHOD OF TEST

1 SCOPE

This standard specifies the method of test for evaluation of pressure drop versus flow characteristics of pneumatic filters used in pneumatic fluid power systems.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No	*Title*
7513 : 1974	Graphic symbols for fluid power systems
10416 : 1992	Fluid power systems and components — Vocabulary (*first revision*)

3 DEFINITIONS AND SYMBOLS

For the purpose of this standard definitions given in IS 10416 : 1992 and graphical symbols given in IS 7513 : 1974 shall apply.

4 TEST EQUIPMENT

4.1 The filter under test shall be mounted in the test circuit similar to that shown in figure 1.

4.2 The necessary instrumentation shall be suitable to maintain the test condition accuracy as given in Table 1.

4.3 A clean-up filter with higher efficiency of particle removal than the filter under test shall be used so that there can be no increase in pressure drop across the test unit due to partial blocking. The cleanup filter shall be capable of passing the maximum flow rate of filter under test.

4.4 Test Conditions and Data Accuracy

4.4.1 Test conditions and data accuracy shall be maintained within the limits as given in Table 1.

Table 1 Test Conditions and Data Accuracy

(*Clause* 4.4.1)

Parameters	SI Units	Test Condition Maintain Within ± of Actual	Data Accuracy Maintain Within ± of Actual
Flow	d m^3 n/s	5%	5%
Pressure	bar	2%	2%
Temperature	°C	8°C	—

NOTES

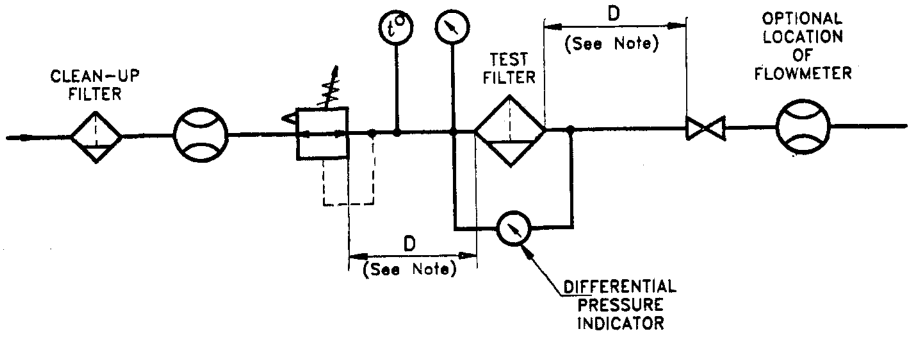
1 Flow rate of compressed gas is specified in standard cubic decimeters per second (dm^3/s) to differentiate between volume flow at standard and compressed conditions.

2 1 bar ≈ 100 kPa.

4.5 Test Procedure

4.5.1 The temperature of the supply air shall be maintained at 27°C within the limits as given in Table 1.

4.5.2 The quality of supply air shall be as recommended by the filter manufacturer.


CLEAN-UP FILTER
TEST FILTER
D
(See Note)
OPTIONAL LOCATION OF FLOWMETER
D
(See Note)
DIFFERENTIAL PRESSURE INDICATOR

NOTE — 10 pipe diameters of line size equal to porting of test filter.

FIG 1 PRESSURE DROP TEST CIRCUIT

Typical quality of supply air is given below:

i)	Size of particles (*Max*)	— 5 microns
ii)	Particle weight (*Max*)	— 5 mg/m³
iii)	Residual humidity (*Max*)	— 5·57 gm/m³
iv)	Dew point (*Max*)	— 2°C
v)	Oil content at atmospheric pressure (*Max*)	— 1 mg/m³

4.5.3 Test at nominal inlet pressure settings of 2·5, 6·3 and 10 bar. Rated pressure of the filter shall not exceed during the test.

NOTE — Tests at additional inlet pressure settings may be added as agreed to between the manufacturer/supplier and user.

4.5.4 Control the inlet air pressure within the limits set in Table 1 of the nominal gauge pressure setting at all flow conditions.

4.5.5 At each nominal inlet pressure setting control the flow rate over the range of the Manufacturer's Rated Flow Rates.

4.5.6 Measure pressure drop by either point-to-point or continuous data recording.

4.5.6.1 For continuous data recording, increase the flow rate at a sufficiently slow rate to ensure that essentially steady state conditions exist.

4.5.6.2 If discrete changes are made in air flow, verify that steady state conditions exist prior to recording.

5 CRITERIA FOR ACCEPTANCE OF TEST DATA

5.1 Verify that the pressure drop as a function of flow rate for each value of inlet pressure is equal to or less than the values specified by the manufacturer for the filters as pressure drop characteristics (refer figure 2).

5.2 Verify that essentially steady state conditions exist as flow rate increases for continuous data recording.

5.3 Verify that steady state conditions exist prior to recording if discrete changes are made in air flow.

6 DATA PRESENTATION

6.1 Present pressure drop data in graphic form similar to that shown in Figure 2 as a function of flow rate for each value of inlet pressure.

6.2 Make the flow limits of the graph for each inlet pressure consistent with the Rated Flow Rates.

7 SUMMARY OF DESIGNATED INFORMATION

7.1 The following designated information is required when applying this standard to a particular application or use.

7.1.1 Rated pressure

7.1.2 Flow rate

7.1.3 Inlet pressure

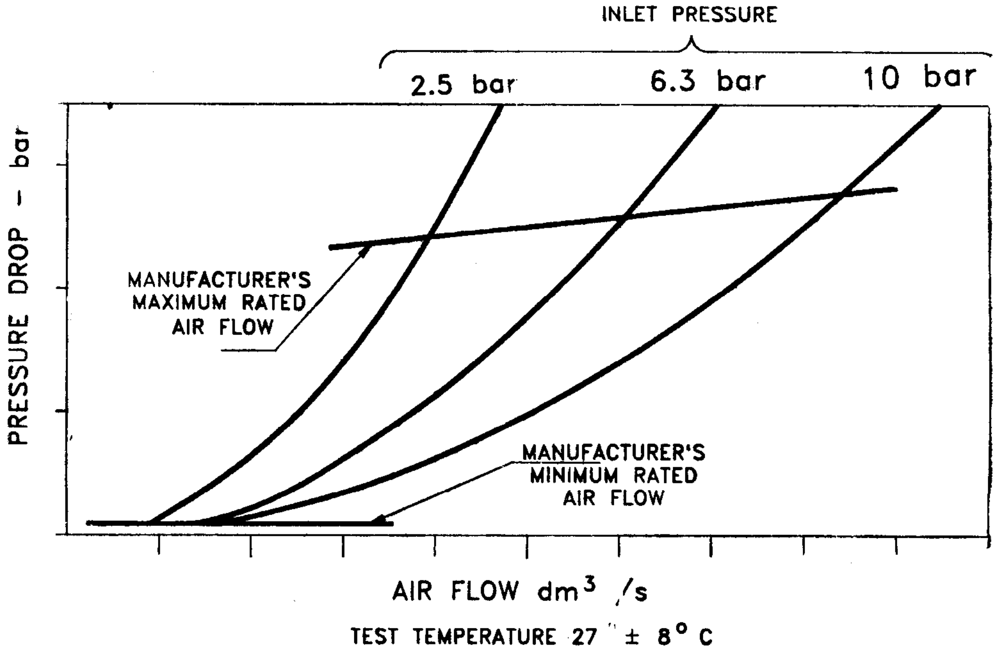


FIG. 2 TYPICAL GRAPH OF PRESSURE DROP CHARACTERISTICS

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No PE 16 (5180)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75
Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :		Telephone
Central :	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern :	1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
Northern :	SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43, 53 16 40 53 23 84
Southern :	C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
Western :	Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	632 92 95, 632 78 58 632 78 91, 632 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. PATNA. THIRUVANANTHAPURAM.

Printed at Printwell Printers, Aligarh, India